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**BRADFORD DYEING ASSOCIATION, INC.**

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PHONE (212) 944-2580

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FREIGHT TO  
WORKS AT  
BRADFORD, R. I.

**AD-A250 136**



**DTIC**  
**ELECTF**  
**S** **D**  
MAR 18 1992  
**C**

A001 Contract DAAK60-85-C-0019, per DD Form 1423,  
Manufacturing Methods Report.

1. A sufficient quantity of 50/50 Nylon/Cotton Twill was prepared in a continuous manner, in accordance with MIL-C-44034.
2. Prepared cloth was vat dyed continuously to the ground shade, as described in MIL-C-44034.
3. Cloth was then overprinted with the vat colors listed in Section 6 of MIL-C-44034 to produce shades in accordance with the standards supplied by R. Cowan of the U.S. Army Natick R & D Center, and using screens made from patterns supplied by Mr. Cowan, per contractual requirements.
4. Cloth was then developed continuously in an atmospheric, saturated steam ager, oxidized, washed, and dried.
5. Cloth was finished and shrunk mechanically, so as to meet the requirements of the specification.
6. MIL-I-45208A Inspection Systems Requirements were followed throughout all processing steps. 47

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**92 3 16 058**

**92-06775**



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QAL #1960  
 BRADFORD DYING ASSOCIATION, INC.  
 P. O. BOX 539  
 WESTERLY, RHODE ISLAND  
 TEST REPORT

CUSTOMER: U.S. Army Natick, Research & Development Center  
 DESCRIPTION: 50/50 Nylon Cotton Twill, Daytime Desert Pattern  
 SPECIFICATION: MIL-C-44034A and Natick Contract DAAK-60-85-C-0019  
 ORDER NO: 78152  
 DATE: August 23, 1965  
 LOT NO: 0019  
 YDGE: 5,866 greige yards

Test Report #85385

Availability Codes  
 Distribution/  
 By  
 Test Location  
 Method Used  
 Date  
 Time  
 Special  
 Dist

Test, Unit of Measure		Results			Requirements	
SAMPLES	Pattern #1	Pattern #2				
	1	2	3	1	2	3
Tensile Strength (5100) Warp	208	215	221	238	205	216
	215	218	224	231	198	220
	213	226	219	235	218	218
	222	220	223	230	225	211
	224	231	230	237	227	209
	216	222	221	234	215	215
Filling	143	129	143	148	140	146
	140	130	143	151	140	148
	136	140	137	143	137	139
	139	134	141	150	142	142
	149	138	142	141	135	144
	141	134	142	147	139	144
Tear Strength (D 1424) Warp	12.4	12.2	12.4	12.3	12.1	12.9
	12.4	11.7	12.1	13.4	11.6	12.9
	12.2	12.3	12.2	12.9	11.9	12.2
	12.3	12.1	13.0	13.2	12.3	12.6
	12.9	12.4	12.1	12.3	12.0	13.0
	12.3	12.1	12.4	12.9	12.0	12.7
Filling	9.3	9.3	11.1	12.3	10.6	11.6
	10.1	9.2	10.7	11.7	10.4	9.9
	10.5	10.0	9.7	11.0	10.1	10.1
	9.2	9.9	9.9	12.0	10.6	11.2
	9.6	9.6	10.3	12.4	9.9	10.3
	9.7	9.6	10.4	11.9	10.5	10.6
Pattern Report		15-3/8	15-1/4	15-3/8	27-1/4	27-3/8

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Test, Unit of Measure	Results			Requirements		
	Pattern #1	Pattern #2	Pattern #3	Pattern #1	Pattern #2	Pattern #3
SAMPLES	1	2	3	1	2	3
Count (5070) Warp	86 85 86 85 86 86	86 85 86 86 86 86	85 86 85 85 86 85	86 86 86 86 85 86	86 85 86 85 86 86	86 86 86 85 85 86
Filling	55 55 55 55 55 55	55 56 55 55 55 55	56 55 55 56 55 55	55 55 55 55 55 55	55 54 54 54 54 54	55 55 54 54 54 54
Porosity (5450)	19 17 17 19 17 18	20 17 16 17 16 18	15 14 14 16 15 15	22 21 21 23 22 22	18 19 17 17 19 18	15 17 18 17 15 16
Seam Efficiency (5110)	87 90 85 89 86 88	81 86 86 83 89 87	89 83 90 87 89 85	84 86 86 88 85 87	89 90 88 86 84 87	83 83 86 85 84 86
Weight (5041)	7.20 7.20 7.00 7.10 7.10 7.1	7.05 7.10 7.10 7.00 7.05 7.1	7.15 7.20 7.20 7.15 7.20 7.2	6.85 6.90 7.10 7.05 6.95 7.0	7.00 7.10 7.10 7.05 7.10 7.1	7.05 7.00 6.90 7.20 7.20 7.1
Width	61	60-7/8	60-1/2	61	61	61
						60" min.

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Test, Unit of Measure		Results			Requirements	
SAMPLES		Pattern #1	Pattern #2	Pattern #3		
pH (2511)	1	6.6	6.5	6.5	1	3
	2	6.6	6.5	6.5	2	3
	3	6.6	6.5	6.5	3	3
Nonfibrous Materials (2511)	1	1.2	1.3	1.1	1.1	1.0
	2	1.2	1.3	1.1	1.3	1.0
	3	1.2	1.3	1.1	1.3	1.0
Mercerized	pass	pass	pass	pass	pass	pass
Weave (visual)	pass	pass	pass	pass	pass	pass
Singed	pass	pass	pass	pass	pass	pass
Deshed	pass	pass	pass	pass	pass	pass
Color Identification (2209)	pass	pass	pass	pass	pass	pass
Nylon: Identification (2539)	pass	pass	pass	pass	pass	pass
Luster	pass	pass	pass	pass	pass	pass
Denier	pass	pass	pass	pass	pass	pass
Nylon Content (2530)	pass	pass	pass	pass	pass	pass
Cotton Content (2530)	pass	pass	pass	pass	pass	pass
Presence of Lubile Sulfur (2070)	pass	pass	pass	pass	pass	pass
Infrared Reflectance:						
Tea	did not meet the requirements as listed in the contract.					
Black						
Brown						
Colorfastness to:						
Light (5000)	Fair	Fair	Good	Fair	Fair	Fair
Wash	Fair	Fair	Good	Fair	Fair	Fair
Sweat	Good	Good	Good	Good	Good	Good

Shall contain no more than 10% sulfur than shown in the std. at

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Requirements

Results

Test, Unit of Measure

SAMPLES

Pattern #1

Pattern #2

1 2 3 1 2 3

Colorfastness to:  
Laundering (3 cycles/  
5610)

Tan  
Khaki  
Brown

pass pass pass  
pass pass pass  
pass pass pass

pass pass pass

pass pass pass  
pass pass pass  
pass pass pass

pass pass pass

Perspiration (5680)

Tan  
Khaki  
Brown

pass pass pass  
pass pass pass  
pass pass pass

pass pass pass

pass pass pass  
pass pass pass  
pass pass pass

pass pass pass

Crocking (5601)s

Tan  
Khaki  
Brown

pass pass pass  
pass pass pass  
pass pass pass

pass pass pass

pass pass pass  
pass pass pass  
pass pass pass

pass pass pass

We certify that the requirements of para. 3.5 have been complied with.

Shrinkage (5556) (A/I)

Warp

3.0% max.

1.6 1.1 1.6 2.2 2.3 1.7  
1.6 1.0 1.6 2.2 2.2 1.7  
1.5 1.2 1.7 2.1 2.4 1.8  
1.6 1.1 1.6 2.2 2.3 1.7

Filling

3.0% max.

2.2 2.4 2.8 2.0 2.0 1.7  
2.2 2.4 2.8 2.0 1.9 1.8  
2.1 2.3 2.8 1.9 2.1 1.6  
2.2 2.4 2.8 2.0 2.0 1.7

\* 50/24 - 3.0% weight - Comb. Lawn

78132

INFRARED  
REFLECTANCE

*ST											
FCO											
WL	%R	%R	%R	%R	%R	%R	%R	%R	%R	%R	%R
700.0	43.82	48.37	44.38	47.71	48.88	47.29					
720.0	44.51	48.85	44.70	47.88	48.97	47.47					
740.0	45.41	49.28	45.30	48.41	47.48	47.94					
760.0	48.58	50.16	48.35	48.26	48.44	48.79					
780.0	48.10	51.45	47.83	50.52	49.71	50.03					
800.0	49.88	53.04	48.56	52.16	51.37	51.60					
820.0	51.85	54.86	51.55	53.93	53.23	53.38					
840.0	53.82	56.86	53.69	55.80	55.16	55.27					
860.0	56.03	58.57	55.88	57.70	57.18	57.24					
880.0	58.08	60.32	57.92	59.48	59.09	59.05					
900.0	59.82	61.80	58.78	61.17	60.81	60.68					
ERR=31											
*ST											
FCO											
WL	%R	%R	%R	%R	%R	%R	%R	%R	%R	%R	%R
700.0	33.73	34.98	33.54	41.50	41.08	40.86					
720.0	34.12	35.11	33.67	41.67	41.21	40.97					
740.0	34.81	35.66	34.17	42.34	41.85	41.54					
760.0	35.70	36.43	34.89	43.40	42.88	42.55					
780.0	36.90	37.55	36.16	44.90	44.37	43.99					
800.0	38.48	39.05	37.71	46.82	46.21	45.91					
820.0	40.38	40.97	39.58	49.03	48.40	48.08					
840.0	42.54	43.08	41.73	51.41	50.70	50.44					
860.0	44.88	45.35	44.12	53.79	53.17	52.93					
880.0	47.19	47.62	46.45	56.12	55.45	55.28					
900.0	49.43	49.78	48.76	58.26	57.52	57.53					
ERR=31											
*ST											
FCO											
WL	%R	%R	%R	%R	%R	%R	%R	%R	%R	%R	%R
700.0	28.69	28.92	28.08	30.10	30.15	29.81					
720.0	29.06	29.10	28.29	30.37	30.36	30.04					
740.0	29.43	29.36	28.46	30.98	30.94	30.63					
760.0	29.75	29.61	28.67	32.03	31.93	31.63					
780.0	30.21	30.00	29.04	33.58	33.42	33.15					
800.0	31.02	30.75	29.79	35.58	35.38	35.14					
820.0	32.12	31.85	30.87	37.89	37.72	37.48					
840.0	33.48	33.16	32.16	40.56	40.39	40.19					
860.0	35.02	34.84	33.64	43.49	43.35	43.19					
880.0	36.53	36.12	35.18	46.51	46.27	46.26					
900.0	38.18	37.74	36.82	49.40	49.21	49.30					
ERR=31											

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I certify that the above tests were performed under my supervision and in accordance with the specification test requirements and that the reported results are true, valid, and applicable to the samples tested. I further certify that these samples were the only samples tested from the lot of end items identified above. I certify that these samples were randomly selected and represent the lot of components identified above.

Signed

*James H. Badger*

James H. Badger - Technical Director  
BRADFORD DYING ASSOCIATION, INC.